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· HUNTERIAN · ORATION · 1913

ROYAL COLLEGE OF SURGEONS

Sir RICKMAN J. GODLEE, Bart.

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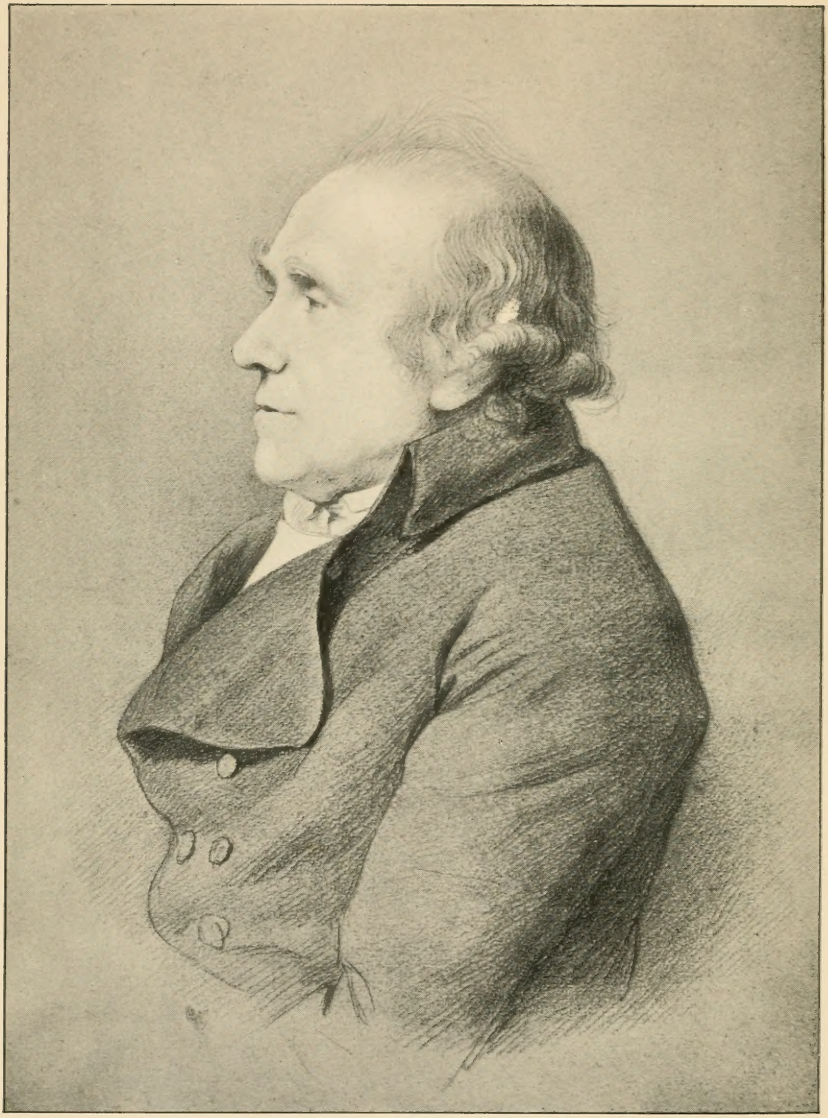
THE HUNTERIAN ORATION.



JOHN HUNTER.

From a drawing by Sir Nathaniel Holland, 1793.

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THE HUNTERIAN ORATION.

Delivered at the Royal College of Surgeons, 1913. By (Sir) RICKMAN J. GODLEE, Bart., P.R.C.S., B.A., M.S., M.D.Dub., Hon. Causâ, Hon. Surgeon in Ordinary to the King.

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HUNTERIAN ORATION.

BY

SIR RICKMAN J. GODLEE, BART.

President of the Royal College of Surgeons.

THE picture which on these occasions hangs over the head of the orator was, as is well known, painted under peculiar circumstances. John Hunter was urged to sit to Reynolds, by his friends, and principally by Sharp, the engraver, who, with strange prescience, foresaw that his engraving of the portrait would prove to be his *chef d'œuvre*. But Hunter objected; he thought it almost as great a waste of time as he did only four years later, "when he fairly wished Sir Joshua and his friends at the devil when called on to take part in the funeral of this eminent artist and delightful author." Besides, he would not allow them to pay for it, and he had always more than enough use for his own money. At last, however, when he was 60 years old, he yielded. It is easy to imagine him—and with much sympathy—fuming and fidgeting in that great arm-chair, with the description of his specimens (on which

he set great value, but which was burnt after his death by Sir Everard Home) at his side. Time after time the master tried to catch his likeness, but without success, and he was almost giving up in despair, when suddenly on Hunter's face came that rapt expression, as, with his mind fixed on other things, he ceased to be worried with his surroundings. Quick as thought the canvas was turned upside down, and between the original legs appeared this face, which, even in the present cracked and faded condition of the picture, has been the admiration of succeeding generations. We have been blamed for having allowed it to become so ruined, but possibly the way in which it was painted may partly account for the disaster.

Look at the picture! I have gazed at it, in season and out of season, for half a lifetime, trying to guess what was the thought that calmed and possessed his restless mind. And now, at last, I seem to know. For one thought occurs again and again in all his writings, and speaks to-day from his museum to him who grasps the idea of its arrangement. *What is Life?* That mystery which baffled the intellect of the ancients, and which still, *pace* Professor Schäfer, is awaiting solution. *What is Life?* And then I recall his strange

SHARP'S ENGRAVING OF REYNOLDS'S PORTRAIT OF JOHN HUNTER.

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formula, which haunts the memory like a sort of wild refrain, "*Body, Blood and Motion!*" When the motion of the blood stops the blood dies; and then the body dies, some parts of it sooner, some later; but it dies, although there is no difference in its constitution perceptible to the senses. Truly, as he observes, "mere composition of matter does not give life; for the dead body has all the composition it ever had. *Life is a property we do not understand; we can only see the necessary leading steps towards it.*"

We all admire the picture. But what would we not give to see for a moment the failures which still exist under the paint at the lower part of it. That would be a likeness of the real Hunter, such as we can only gather from hearsay.

If he were to slip out of his frame into our midst it would give us a shock to see, instead of that inspired philosopher, a sturdy thick-set man in a brown eighteenth-century full-skirted coat and breeches, a bull-neck, an underhung jaw, thin white hair that had once been red, and such an eager manner, and such a sparkling eye! He could not have stepped into this theatre, for the place where our College stands was occupied by residences, except one part in the rear where there was an old theatre giving

on Portugal Street. But I can imagine him crossing the open tree-less square, with a pond in the middle, and making his way by Queen Street and Long Acre, or the Strand, to his house in Leicester Fields. He would hardly have ventured on a cross-cut through St. Giles's, for even in *my* young days it was a questionable district for respectable pedestrians. I think of the people he might have met: Dr. Johnson blinking as he groped his way towards the Cock Tavern in Fleet Street; Fanny Burney, the novelist, bowing from her sedan chair to Edmund Burke or Windham; "Sir Roger" in his coach-and-four; Mrs. Siddons or Garrick stepping towards Drury Lane; the refined Percival Pott, his greatest rival; or Warren Hastings with his anxious face. And one might wonder that he is scarcely mentioned in the writings of Mrs. Montagu or Madame Piozzi, and that he does not seem to have mixed much with the distinguished intellectual circle whose names are still to us household words, if one did not think of the enormous amount of work which Hunter crowded into the forty-five years after he left Scotland at the age of twenty, with no great reputation for diligence or application. I see the strange dress of the common people and hear the noisy rumble of the huge wagons,

LEICESTER FIELDS IN 1753.

From an old print.

This date 1753 was the date of the publication of the plate.

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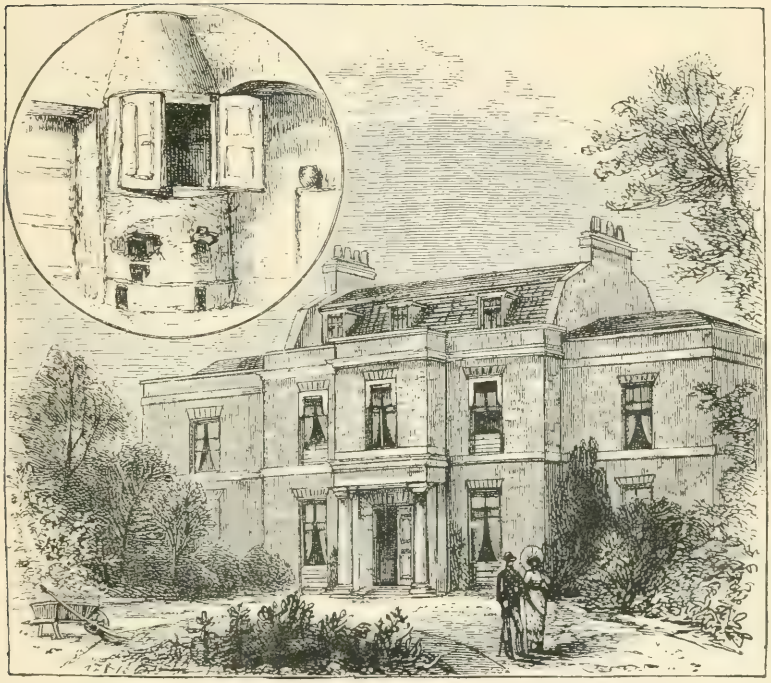
and the "cries of London" ;—that little London of 500,000 or 600,000 inhabitants, which, in 1740, did not extend beyond Old Street, Queen Square and Portman Square on the north, "Tyburn Tree" and Westminster on the west, Mile End on the east, and was connected by two bridges only with the small borough of Southwark, enclosed by the upward loop of the river. It was like a great isolated country town; and from this Square ten minutes' walk led to green fields and farms and streams and primroses and footpads. At Leicester Square his great yellow coach, which had crossed the drawbridge at the back of his house leading into Castle Street, would be waiting for him, and his coachman would drive off with his two bay stallions to his country house at Earl's Court. If Leicester Square was at all in the state I first remember it, it must have been a waste indeed. He would go down Coventry Street, looking much as it does now (though Regent Street did not exist), and along Piccadilly, then occupied only by the mansions of the great. Passing St. George's Hospital he would turn to the left down Bell Lane, now the Brompton Road, through fields with hedges and trees, till he reached his destination at Earl's Court, two miles from London.

Pictures of the house show it as a plain stuccoed villa, evidently built in stages, standing in grounds of moderate dimensions. It looks uninteresting, but we know that there were caves and dens of the earth, in which wild beasts were kept, and from which they sometimes escaped; and coppers in which the skeleton of a giant could, if need arose, be quickly freed of its flesh. Other strange animals roamed about the park, and a stuffed crocodile hung, like a presiding saint, over the front door. Within were carried out all sorts of investigations; for it was to Earl's Court that he retired whenever he was able—too far from London for casual interruptions, but not far enough to miss calls of great importance or urgent necessity. There no doubt many of the preparations were made, if not mounted, which found their way into the museum at Leicester Square.

There is an engraving of No. 28 at the south-east corner of Leicester Square and we can picture the front parlour, and the study, and afternoon bedroom, and the print room, and the sedan chair standing in the hall. He bought the lease of this house and of one at the back in Castle Street, and between them he erected a building at a cost of over £3,000. On the ground floor were the great parlour



HUNTER'S HOUSE AT EARL'S COURT

And the copper for macerating bones.

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for weekly meetings of his medical friends and a theatre for his lectures. Above it was the museum, lighted from the top, 52 ft. long and 28 ft. wide, with a gallery all round. The house in Castle Street was used for the different branches of human and comparative anatomy, for his printing press and publishing department, and contained a sitting-room for his students.

Let us try to think what this museum was like, and why it was formed, for it seems strange for a busy surgeon to devote a large part of his house and a very large part of his life and nearly all his fortune to the formation of an enormous anatomical museum. One could not imagine such a collection now in Harley Street or Cavendish Square.

In the first place it must be borne in mind that Hunter was a man of phenomenal industry, whose mind was interested in everything to do with Nature ; to him the pursuit of natural history amounted to a passion—a passion that many of us can sympathize with, "for Nature never did betray the heart that loved her." But it must also be remembered that he possessed in an almost exaggerated degree the mania for collecting, which is also a vice not quite unknown amongst my audience, who sit on Chippendale or Empire chairs

speculating on the works of the Old Masters. Another vice he had which is shared by too many of our profession: He only thought of money as a means for gratifying his ruling passion, and so he crowded his house with works of art, and his museum, not only with specimens which illustrated his novel views of physiology, but with others interesting only from their rarity or beauty. He thought no more of spending £500 on the skeleton of the Irish giant, or buying a picture by Zuccarelli or Hogarth's prints, than is now thought of paying a thumping sum for a 16th-century bronze; and though he took the keenest interest in his patients' diseases, he looked at the "damned guinea" only as the means for enriching his collection; and so it is no wonder that he left little to his heirs besides this incomparable museum.

But it must not be thought that this was a mere *omnium gatherum* of everything that came in his way—very far from that. It only needs to examine the specimens now in the museum, all religiously distinguished by their two black figures, to appreciate that either he never put up anything except the best—which is not likely—or that, like a true collector, he eliminated all except the best; for they are nearly all of superlative excellence, and illus-

strate in a striking way the particular object for which they have been preserved—that is, the physiological or pathological process, not the mere isolated anatomical fact.

It is almost inconceivable when looking through the "Essays and Observations on Natural History, Anatomy, Physiology, Psychology and Geology" (being Hunter's posthumous papers collected and arranged in two volumes by Sir Richard Owen in 1861), that out of this apparent chaos such a definite plan could emerge as the groundwork of the museum. One is lost amongst such subjects as the sociability of man and animals, the rising of animals, air in the bowels, the mind, fossils, or parts whose uses are not known. No one can attempt to summarize such a vast variety of material, but we may gather from Clift's catalogues, which were copied from Hunter's manuscript (destroyed, as I said, by Home) and from Owen's careful appreciation of them, the system on which the original museum was arranged. That, however, would be going over well-trodden ground, and I will, therefore, though the prospect may seem dull enough, try to explain to what extent the arrangement of our present museum follows or departs from the plan of the master. In an advancing science like ours too slavish a worship of the

past could only lead to stagnation, and, therefore, some modifications have been made, although it has been the wise custom of the succeeding conservators to think twice or three times before such innovations were introduced.

If Hunter were really here to-day, and asked how we had occupied our stewardship, in the first place I should be dreadfully alarmed, as being in the presence of a man endowed with many of the attributes I most admire without possessing, such as intense diligence, absolute exactitude, the power of abstraction and unlimited patience, and at the same time a remorseless critic of the absence of those qualities in others.

But after invoking the support of our conservator and the two curators, Mr. Shattock and Mr. Burne, who would admirably defend me, I should invite him to walk through our museum.

First, however, I should tell him that his collection waited in its original abode till 1800, when it was taken over by the College, and that during that time it was carefully watched over, kept clean, and dusted by his trusty assistant, Clift.

Clift, it may be observed, was born in great poverty, and was sent up from Devonshire by Hunter's sister, and engaged by him on

WILLIAM CLIFT.

By Bosley, after Claudet Dagner.

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February 14, 1792, without fee, to write and make drawings and dissect and take part in the charge of the museum. This took place only a year and a half before Hunter's death. Poor faithful Clift! He got seven shillings[1] a week for seven years—from Matthew Baillie and Home—and kept patiently dusting and cataloguing. At last, when the Government gave £15,000 for the collection and subsequently £12,500 in addition, and the College gave £21,000 for the building of the first museum, he was made the first conservator. He held this post till 1842, when he retired on account of ill-health with a pension of £400 a year.

And here I should slip in the piece of information that the College has spent not less than £500,000 upon its construction and maintenance up to this time.

Clift saw the incorporation of several other museums, such as those of Blizard, Astley Cooper, Heavyside, Brookes, Liston, Langstaff, South, Howship and other famous surgeons. He had not brains enough to enlarge it himself, but he was sincerely devoted to the memory of his master—I had almost said he was an

[1] It should, however, be remembered that they insured his life for £1,000.

abject worshipper, and with the assistance of his son, he got it into order for display and development by the more distinguished men who followed him.

The first of these was Richard Owen, a man of a different type, whose very aspect suggested cerebral-hypertrophy. Born at Lancaster in 1804, and educated at Edinburgh and St. Bartholomew's Hospital, he first embarked in general practice in Cook's Court, Carey Street, in 1826. He was appointed assistant conservator in 1827, and full conservator in 1842. So he worked long with Clift, married his daughter, and was thoroughly imbued with his father-in-law's hero-worship. He became a comparative anatomist and palæontologist, and added many of those weird forms which now occupy the floor, glyptodons and megatheriums, and the giant elk, and fossils by the gross. But his great work was the publication of the memorable descriptive and illustrated catalogue of the physiological series of comparative anatomy, to which department he made important additions. Owen's was a stressful reign, for he could ill brook control, and the museum committee meetings were frequent and stormy. And so, great man though he was, he left without a vote of thanks or regret, to take charge of

SIR RICHARD OWEN.

Bust by Gilbert.

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JOHN THOMAS QUEKETT.

From a mezzotint.

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the Natural History Department of the British Museum in Bloomsbury in 1856. Though he came much under the influence of Cuvier, who had a widely different outlook from that of Hunter, this did not prevent him from collecting and publishing in 1861, in two volumes, the posthumous papers of Hunter, whilst he was carrying out an enormous amount of work of his own at the British Museum.

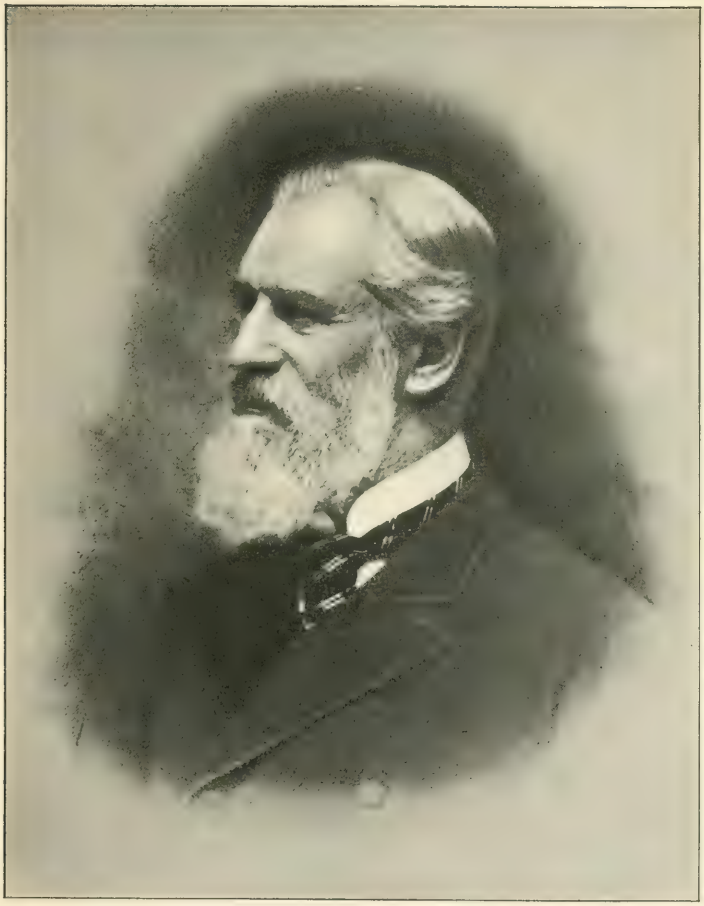
Then came Quekett, of the Quekett Club fame, who had been student dissector at the College and assistant curator since 1842. He was essentially a microscopist, one might say a born microscopist, for his father was one before him, and at the age of 16 he gave lectures on microscopical subjects, illustrated by a microscope he had made for himself out of a roasting jack, a parasol, and a few pieces of iron he had purchased at a neighbouring marine store. He added little to the museum except a valuable microscopical collection, but he drew up a catalogue of the fossil organic remains of plants. He was, as his portrait indicates, a jovial man. He retired on account of ill-health, and when he died at Pangbourne in 1861 he left a penniless and, alas! unpensioned widow.

He was followed by Flower, a strong organizer and a born manager of men, whose

graceful figure and handsome face many of us can remember. Under his peaceful rule dissensions ceased. He was, to begin with, Assistant Surgeon at the Middlesex Hospital, and served as surgeon in the Crimean War. He was appointed conservator in 1861, and stayed until 1884, when he succeeded Owen in the charge of Waterhouse's terra cotta palace at South Kensington. He developed into a pure comparative anatomist and specialized in bones, and especially human bones. He amplified and enlarged Hunter's osteological collection, and has left in it a memorial to his industry and skill to which I shall refer later.

A word of explanation with regard to the natural history collection must here be introduced.

There were no natural history museums in London before Hunter's time. But the British Museum in its earlier days began to make such a collection. In 1809 they wanted to get rid of these specimens and sold them to us for £180, but in 1814 they found they had made a mistake and so we sold them back again, but by good fortune retained the Evelyn plates of vessels and nerves, made in 1642 by a professor in Padua under Evelyn's direction, and given by him to the



SIR WILLIAM FLOWER.

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CHARLES STEWART.

To face page 13.

Royal Society, and by them to the British Museum. Dr. Keith has had them properly mounted, and they now have a prominent place allotted to them.

Hunter had a good many stuffed animals, but after obtaining a Royal Warrant, which was required before any of his specimens could be disposed of, they were sold, or otherwise got rid of, in 1829, 1834, 1843, and 1876; including, alas! those collected by Captain Cook. It must be remembered that at one time we used to fit out exploring expeditions, such as those of Captain Everard Home, Banks, Beechey, Franklin, Ross, Parry and Darwin, with bottles and apparatus, and have now in our possession many of the specimens which they brought home.[1]

When Flower left in 1884 he was succeeded by the amiable, retiring, laborious Stewart. Being a man of artistic temperament, he was attracted by such subjects as mimicry, symbiosis and protective colouring. He was

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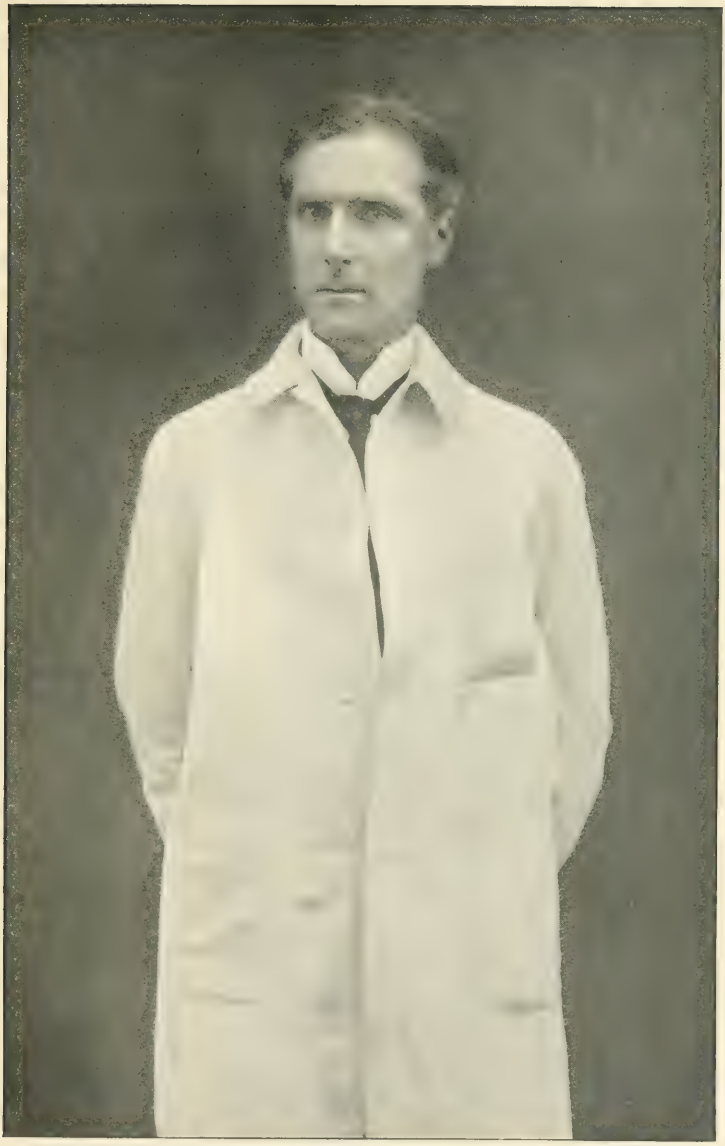
[1] Sir Joseph Banks, P.R.S., 1778-1820, a friend of Hunter's, accompanied Captain Cook and made independent voyages. Captain Everard Home, of H.M.S. *Racehorse*. F. W. Beechey accompanied Franklin and made other expeditions. The expedition in which C. Darwin took part is the celebrated voyage of the *Beagle*.

at first a teacher of physiology at St. Thomas's Hospital, but, after his appointment here, worked as a comparative anatomist. He extended Owen's rearrangement of the physiological series, which was not quite on Hunter's lines, as they both took rather the mechanical view as opposed to the physiological. A consummate draughtsman and a clear exponent, he made many discoveries which he was too indolent (may I say?) to publish, but they remain on the stands as silent but eloquent witnesses of his work.

And now I should tell Mr. Hunter that the mantle has fallen upon a thoroughbred compatriot of his own, and should feel confident that between them there would be illustrated the *action of the principle of universal sympathy*, except perhaps that there might be some incongruity between the northern accent of the one and that which used to be current in the neighbourhood of Long Calderwood. It would be necessary to add that under Dr. Keith's guidance, with the able assistance of the curators, Mr. Shattock and Mr. Burne, we are trying our best to keep Hunter's spirit in view in all the changes which have been lately made and are still in prospect, and to add that "Body, Blood, and Motion" is our motto, and to illustrate the processes of life is our leading idea.



ARTHUR KEITH.

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THE MUSEUM OF 1800.

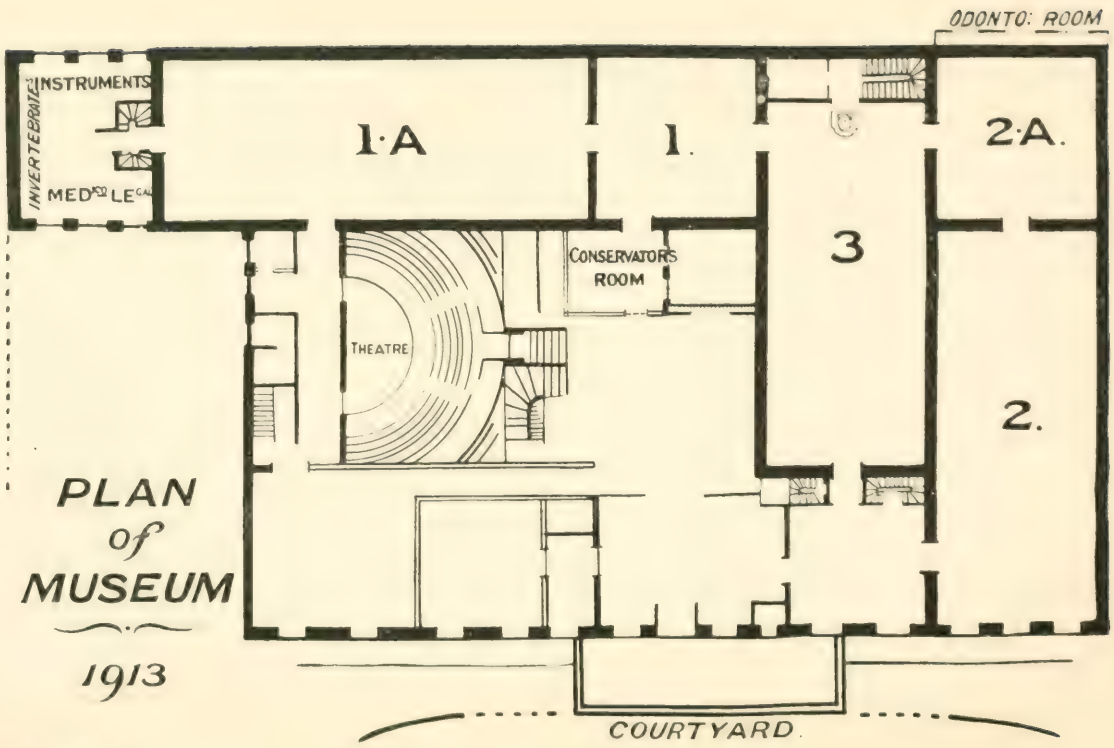
These are the conservators, but it would be wrong not to mention some of the illustrious workers who, without holding that office, devoted much time and labour—often a labour of love—to the museum. Pre-eminent amongst them is Sir James Paget, who examined and elucidated so thoroughly and wrote so much of the descriptive part of the catalogue; and besides his, we recall the names of Stanley, Goodhart, Doran, Eve and Targett, and men like Elliot Smith, who have added complete chapters to its story.

Some idea of the way in which the museum has grown may be gathered by remembering that no part of the original building remains. The room first erected was begun in 1800 and completed in 1813, just a century ago, partly on the site of houses belonging to the College, partly on that of the old theatre in Portugal Street, and occupied a position in the middle of the three existing galleries. This was large enough to contain all the 13,682 of Hunter's specimens, including some which, as I said, have disappeared, as is shown by a very indifferent sketch, apparently of Clift's, in which the head of a giraffe, no doubt the one which in 1834 went with the other stuffed animals to the British Museum, appears looking out of the museum through the gallery into the cabinet room, whatever that may have been.

The museum is now more than three times the original size, and contains 64,766 mounted specimens; and there are besides still unexplored stores to which constant additions are being made.

Some people may wonder why we try to keep adding to our invested funds. I say nothing about the uncertainty of riches, though that is perhaps more obvious now than when the phrase was coined. But I should like to point out that the museum will continue to grow and that we may some day wish to enlarge it, which would involve three things: diminution in income from rents, loss of interest on capital expended, and increase in expenditure for upkeep.

The museum now consists of three long rooms, two of which are parallel with one another, and the third at right angles to these, both the first and the third being divided into two parts. Roughly speaking the last contains the physiological series, while the two others are devoted to anatomy and pathology; but there are other rooms to which reference will be made; and scattered throughout are curiosities which have to find places where they can. Here a huge skeleton of a whale floats, like Mahomet's coffin, in mid air; and elsewhere are such unlikely objects as the clothes



PLAN of MUSEUM

1913

To face page 1.

of a man stripped off by lightning, leaving him intact; or the initials—perhaps of two lovers—found on splitting a beech tree, healed over and buried beneath many annual rings.

But it is really time to proceed with the proposed formidable inspection, and I would suppose that we begin by conducting Hunter through the door opening out of the conservator's office into the smaller part of the eastern room (1), in the cases round the walls of which is the commencement of the series of comparative osteology.

He would gaze with astonishment at the group of vast fossil skeletons,[1] and might possibly ask us what they had to do with his museum, a question which might at first seem hard to answer. But the great black statue of Owen in the corner would remind us that in 1855 he gave some lectures in this theatre on Hunter's published and posthumous papers on fossils, and that he showed by many quotations that Hunter began to hold almost modern ideas about geology and palæontology

[1] Hunter never saw the skeleton of a megatherium. The first was found in 1789, but not described till 1796. He had, however, the skull of a cave bear, parts of the skeletons of *Bos primigenius* and of the mastodon, but no complete skeleton. Most of his fossils were those of Invertebrata.

as early as 1761, when he was serving with the Army in Portugal. The story of Noah's deluge had not satisfied Leonardo da Vinci and Fracastoro in the fifteenth century, but it still hampered the thoughts of scientific men of the eighteenth century. It is, therefore, remarkable that Hunter was able to emancipate himself so completely and, to quote from Owen, to recognize, "first, the effects of running water, as in valleys and river courses; secondly, the deposition of the matters so transported to the sea, noting the different distances to which such transported matters would be spread over the sea bottom, according to their size and other physical characteristics; thirdly, the erosive action of the sea on coasts, as moved by tides, currents and winds; fourthly, the power and mode of operation of a retiring sea on a rising land; fifthly, igneous expansive force and volcanic eruptions; and sixthly, deposits through animal or organic agency."

This includes almost every agency of geological dynamics recognized at the present day, except that of ice, and was arrived at "by supposing from the state of the earth as it is now what must have taken place formerly." From this standpoint Hunter seems to have had an inkling of the origin of species and the gradual evolution of life, and was able to

contemplate in some measure the antiquity of man. Thus it is fitting that (presided over by Owen) these horrid monsters should guard the portals of our museum and that Hunter's 2,773 fossils should be lodged, with his invertebrate specimens, in a special place of honour.

So we should turn to the left and tell him that the crowd of vertebrate skeletons in the next room (1A), amongst which he would recognize many of his own favourite preparations, should really be in the cases along the walls, only unfortunately they are too large. These cases contain the continuation of the comparative osteology series. In passing we should point out Flower's magnificent preparations, illustrating the evolution of the individual mammalian bones. On our way up to the galleries it would be explained that leading out of them are the new rooms added last year, containing a collection of surgical instruments, the embryo of a medico-legal collection (which he would surely approve) and his own invertebrate collection and the fossils to which I have just referred. And then in the galleries he would find his own physiological series amplified and enlarged. We should show them with confidence, tempered by the fear that he might impatiently resent certain

modifications of order and arrangement; though he could not fail to recognize that the *idea* had been grasped. We should point out that the physiological series still illustrates processes rather than isolated facts, and is, therefore, drawn from the whole range of comparative anatomy. Thus, taking as an example the heading "Kidney," he would find specimens from 133 animals other than man, no less than 71 out of the total of 144 being his own,[1] and that the same thing is carried out under the other headings, which are as follows:—

Organs of locomotion	Skeleton.
	Joints.
	Muscles.
Nervous system ...	Central.
	Peripheral.
Organs of sense	Touch.
	Taste.
	Smelling.
	Hearing.
	Sight.
	Special senses.

	Hunterian	Added by College
[1] Human	2 ...	3
Vertebrates ...	64 ...	64
Invertebrates ...	5 ...	6
	71	73—total 144.

Skin.
Luminous and electric organs.
Adaptation of organs to locomotion.
Nutrition ... ... Mastication.
Digestion.
Absorption and assimilation.
Ductless glands.
Circulatory system.
Respiration.
Sound-producing organs.
Urinary organs.
Reproductive system.
Structures for protecting the young.
Structures concerned in nourishing the young.
Development.

These are all practically the same headings as Hunter's. Stewart added the following four series:—

Alternation of generation (dimorphism, polymorphism).
Secondary sexual characteristics.
Normal variation of species.
Commensalism.

In order to grasp the plan on which the whole museum is arranged, it would then be best to visit the ground floor of the western rooms (**2**) and (**2A**). Beginning with the cases

on the walls, we should find illustrations of normal (and it must be owned some abnormal) varieties of humanity, amongst which Byrne, the Irish giant, would be a familiar object. There are skeletons of dwarfs, of average men and women, and of geniuses and of criminals; and then we should start on the splendid collection of skulls illustrating ancient and modern types, and examples of those of all the races under the sun present and extinct. This carries us round both sections of the room, and a considerable part of the middle room.

The floor of the western rooms is devoted to specimens illustrating human anatomy. First the collection of disarticulated bones in progressive series, showing their development from early fœtal life to maturity; and then dissections, which are said to be unequalled, mostly made by the skilful hands of Mr. Pearson, who has been prosector here for fifty-six years.[1]

And now there would be left only the pathological section to which it would be my duty and my pleasure to especially invite the attention of my guest, as I now do that of my audience.

[1] His grandfather died in 1857 after fifty-three years of service to the College, and his father in 1882 after fifty-one years. Adding the three together the total amounts to 160 years.

Hunter's catalogue of this part of his collection was left in considerable confusion, but it is clear that his idea was to divide it into two main groups, one illustrating processes of general pathology, the other the various morbid processes affecting particular organs. This has long been before the minds of those who have had charge of the museum, as is shown by the preface to the second edition of the catalogue of pathological specimens drawn up by Sir James Paget, with the assistance of Dr. Goodhart and Mr. Burne in 1882. But it is only during the last year that the Council, urged thereto by the conservator and curators, has made arrangements for a full display of specimens illustrating general pathology.

The floor space of the central room (3) has been cleared in a way it is needless to describe, and if it were only possible to find a better home for the suspended skeleton of the whale, uninterrupted daylight would illuminate groups of glass and gun-metal stands so arranged that they can be observed from all sides, labelled and supplied with handy card catalogues, and following one another group by group in the following order :—

(1) Hypertrophy.
(2) Aplasia.

(3) Hypoplasia.
(4) Atrophy.
(5) Degeneration.
(6) Necrosis.
(7) Repair and grafting.
(8) Inflammation.
(9) Infective diseases :—

Bacterial	Glanders.
	Acute endocarditis.
	Diphtheria.
	Tubercle.
	Actinomycosis.
	Bacterial dysentery.
	Plague, &c.
Protozoal	Syphilis.
	Amœbic dysentery.
	Malaria, &c.

(10) Cysts.
(11) Tumours.
(12) Foreign bodies.

I have placed upon the table a few Hunterian specimens in order to show how it has been, not only possible, but highly advantageous, to use them for this purpose. You will observe what remarkably fine preparations they are.

(1) A ringed stem to illustrate hypertrophy.
(2) An edentulous jaw to illustrate atrophy.

(3) Atheroma of the aorta to illustrate degeneration.

(4) Experimental necrosis on the metatarsal bone of an ass to illustrate necrosis.

(5) A hare-lip; (6) a fractured clavicle; (7) a cock's spur implanted into the comb to illustrate repair and grafting.

(8) Myositis ossificans; (9) necrosis following on a scalp wound to illustrate inflammation.

(10) Tubercle of the lung of an ox; (11) specific necrosis of skull, to illustrate infective diseases.

(12) Gas cysts in a hog's gut to illustrate cysts.

(13) Sarcoma of rib to illustrate tumours.

(14) Gunshot injury of humerus of swan to illustrate foreign bodies.

It would have been impossible in Hunter's time to make so complete a list as this, because the great group of infective diseases would have been simple and unanalyzed. If he had possessed a knowledge of bacteriology it would have saved him a vast amount of fruitless speculation, or at all events speculation which now seems to be disappointingly beside the mark. I think he would have lingered long

over this department, for I hope it has been made clear that what has just been said is intended to be the kernel of my address: that this exhibition of illustrations of general pathology, though a new departure, is Hunter's idea, and that it is not only new but good, and, as far as I know, unique. I would therefore urge my hearers, and readers, to visit and study it and judge for themselves of its utility and interest, and of the skill of those who have brought it together.

The tour of the museum would be completed by visiting the galleries of the central and western blocks, where the specimens are arranged according to the organs affected. In ascending to them it would be pointed out that a staircase descends to the basement, in which is housed our unequalled odontological collection, where, amongst the specimens which came to us from the Odontological Society, are Hunter's own classical preparations.

And now I should bid my guest adieu, feeling, if not saying, that while in his writings there may be some things hard to be understood, here in our museum is inscribed in unmistakable language the record of thoughts and ideas that it is impossible to misapprehend.

Thus, in an imperfect way, I have tried to show what the Royal College of Surgeons has

done, and hinted at the certainty that some day the museum will have to be enlarged. Now let me put before you a vision of the future. Ought not this great city to have an Anatomical and Pathological Institute? Our University has again, by collision, passed into the nebulous state, and we know not in what form, nor indeed, in what orbit or orbits, it may finally revolve. It may confidently be anticipated that it will emerge as a life-supporting globe or double star with a more equable temperature than at the present moment. Money is to be had for proper asking, and a site is generally obtainable when it is required. Can you not see such a noble institute close at hand, forming a part of a really living university, and also in close connection with our College, attracting workers from all over the world, to utilize the vast material the museum contains? It would strengthen the feeble bonds which at present unite us to the University, and supply a long-felt want to the medical faculty. It would offer opportunities for original research in human and comparative anatomy and in pathology; and in its theatre lectures on advanced subjects would be delivered *urbi et orbi*.

The terms of the bequest under which these orations are given instruct the speaker that

such orations should be "expressive of the merits in comparative anatomy, physiology, and surgery, not only of John Hunter, but also of all such persons, as should be from time to time deceased, whose labours have contributed to the improvement or extension of surgical science."

This would be an impossible task, for the whole world is apparently included in the purview, but according to custom, and by inclination, I must say a few words about two friends and colleagues on the Council whose vacant places we deplore.

Clinton Thomas Dent, an all-round original and successful surgeon at Hunter's own Hospital, was Vice-President at the time of his unexpected death last summer. He had no specialism in medicine, and he will rather be remembered by his numerous friends for his many-sided character, multifarious attainments and sterling worth, than for striking additions to surgical practice or literature, and yet his contributions to them were neither few nor unimportant.

Sir Henry Trentham Butlin, my immediate predecessor, on the other hand, was well known as a surgical pathologist, whose chief labours were devoted to the treatment of cancer, and the elucidation of its cause: a

subject to which it may be said he devoted his last breath. Those who can recall this day four years ago, when his oration was delivered in perfect English and without a note, will agree that he was a finished orator. We on the Council knew him as an admirable man of business, who wisely conducted the affairs of this College, as one of the highest integrity, a pleasant companion, and a faithful friend.

But beyond and above all the other leaders, or men in the ranks, who have passed away during the last two years, is Lister, who by common consent is the greatest—that is, the most thoughtful and original—surgeon since Hunter's time, one who more than any of his predecessors was influential in revolutionizing both the science and the art of surgery.

It is not the occasion to enter upon a survey of Lister's work, but it may be interesting to consider the influence that Hunter had upon him, and briefly to compare the two men.

The first time I heard the name of John Hunter was in my youth during one of Lister's vacations, which he often spent at his father's house. The subject he was describing is forgotten, but the name impressed itself upon my young memory, and many a time in after

years have we, who were closely associated with him, heard this name recalled with reverence and admiration. Occupying a prominent place in his study was Sharp's engraving, bequeathed to him by Mr. Syme, and now my treasured possession, as is also the edition of "Palmer's Life," which is marked in many places. These passages show that Lister was studying this book at the time he was making his early observations on coagulation of the blood. Indeed, a precise date may be fixed by a pencil note to the account of "a gentleman with violent inflammation in one of his eyes and whose blood was extremely sizy, though the coagulum was very loose." The note is: "No excess of fibrin in this buffed blood apparently. J. L., 58." Other marks are apposite references to inflammatory fever and Fothergill's putrid sore throat; the principles of bleeding, and especially their possible dependence upon continuous sympathy; and local diseases cured by sympathy, as by the application of an irritating medicine applied to some other part which this diseased part sympathizes with. There are several in the lecture on aneurysm, indeed, there are exclamation-marks opposite some references to hydrostatics, and similar annotations are met with in the lecture on fistula, and elsewhere.

It might be wondered what were the points of attraction between men in many ways so different. Certainly Lister possessed none of Hunter's mania for collecting. He had, indeed, what he called his museum, one or two bread-pans containing specimens, no doubt of great value, and familiar to the succeeding generations of attenders at his lectures. But his shelves and cupboards were filled with more transitory things—flasks and test-tubes and the materials for experiment. Lister bought no costly works of art and was content with early or late Victorian furniture, and though he often adopted Hunter's generous but confusing method of leaving the amount of the fee to the patient's decision, he did not spend the proceeds in the same reckless way.

The points in Hunter's methods which Lister seemed most to admire and adopt were, first, that he appears to have taken nothing for granted. No matter how revered the teacher, how sacred the tradition, Hunter and Lister both asked themselves whether the evidence was sufficient to support the theory or warrant the treatment. Perhaps they would not have liked to be called sceptics, but in scientific matters they were, and it is the only safe position for a scientific man to adopt, though it may not indicate the path of worldly wisdom to the practitioner.

Illustrations might be given in Hunter's operation for aneurysm, or his observations on fistula in ano, or in Lister's amputation of the thigh, his excision of the wrist, or his methods of treatment of varicose veins or hydrocele. But there is no need to multiply examples. The whole story of Lister's discoveries and of the modifications in ordinary surgical practice which he introduced testifies to the truth of this assertion.

But, secondly, the most striking resemblance between them is their habit of referring everything to experiment. Their lives were occupied in testing by means of experiment every problem that presented itself. They were indeed, both of them, ideal inductive philosophers.

It seems in some quarters to be considered that an inductive philosopher is debarred from framing for himself hypotheses, but this I conceive is not the case. Did not Bacon himself say, "Vaga experimentia mera palpatio est"? Such an idea would seem to imply that the followers of that great thinker experiment at large, and only accept the results of those promiscuous excursions. The difference, however, between them and the deductive philosophers is that the latter found their creed on deduction from unverified postulates, whereas

the former require proof of the correctness of the premises before they complete the syllogism. No great Baconian can get on without hypotheses, but he is ready to reject those that are not supported by his experiments. Are not Pasteur and Darwin proofs of the truth of this statement?

There is an interesting appreciation of Hunter's character in Buckle's "History of Civilization in England." Buckle is almost labouring the point that the trend of thought in Scotland in the 18th century was *deductive* and that in England *inductive*, and is arguing that Hunter was a sort of hybrid.

"When John Hunter arrived in London, in 1748, Newton had been dead more than twenty years, and the English people, absorbed in practical pursuits, and now beginning for the first time to enter into political life, had become more averse than ever to inquiries which aimed at truth without regard to utility, and had accustomed themselves to value science chiefly for the sake of the direct and tangible benefit which they might hope to derive from it.

"That Hunter must have been influenced by these circumstances will be obvious to whoever considers how impossible it is for any single mind to escape from the pressure of contemporary opinion. But, inasmuch as all his early

associations had inclined him in another direction, we preceive that, during his long residence in England, he was acted on by two conflicting forces. The country of his birth made him deductive; the country of his adoption made him inductive. As a Scotchman he preferred reasoning from general principles to particular facts; as an inhabitant of England he became inured to the opposite plan of reasoning from particular facts to general principles."

It is rash to differ from so great an authority, but, as a matter of fact, did Hunter really get his mind down on methods of reasoning and such abstruse questions during his idle youth at Long Calderwood when he cared much more for country sports than for books, or whilst helping his convivial brother-in-law, Buchanan, in his carpenter's or wheelwright's shop? Did he even acquire from his surroundings or by inheritance any method of ratiocination? I think not. And if Scotch influence had anything to do with the formation of his mind it must have come from his brother William. But in reading much of his writings and in trying to assimilate the spirit in which the museum was planned, I feel that Buckle has overstated his case and that Hunter was essentially an inductive philosopher.

And so was Lister. His whole life was made

up of experiments. Any time that could be filched from practice or unavoidable public and private duties, was spent in his study, investigating for himself such subjects as the coagulability of the blood, the growth of micro-organisms, the properties of antiseptic substances, blood pressure and so forth, and it is interesting to notice how he called in aid, for the solution of his special problems, a well-grounded knowledge of botany, zoology, chemistry and physics, subjects of which it is becoming too much the habit nowadays to minimize the importance.

But there are fundamental differences between them, of which the most important (to speak with all respect) is that Hunter's work is the more diffuse. He seems to fly from one subject to another, as if he were unable to resist the temptation to investigate everything that came in his way. It is as though what has been referred to above as the spirit of the collector inspired his more serious work, and so he has left a record of an almost incredible number of problems either completely or partially elucidated. Lister, on the other hand, did not yield to this temptation, if he felt it. Starting in the narrow path upon which Providence had placed him, he followed it till it broadened

and straightened out into the great highway that led him to his goal. Not that he denied himself the pleasure of occasional explorations of tempting by-paths, but what he gained from these excursions was always utilized to corroborate and support him upon his journey. And thus it comes about that Lister's fame rests chiefly upon the one great achievement of his life, whilst the lesser and more subsidiary ones are by many forgotten or ascribed to others; whereas it is difficult to mention one or even a few of Hunter's labours which stand out in glaring predominance above the rest.

Of less importance, but equally striking, are the differences between them in temperament, culture and manners. Hunter was imperfectly grounded in general education, a small reader, abrupt, not to say rough, in his conversation, which was flavoured with a full share of the impetuous vocabulary of the eighteenth century. Though generous, he was impatient; though on the whole a good friend, he was somewhat inconstant; and his mind was so fully occupied with his work that more solemn subjects had no chance of consideration.

Lister's mind was well stocked with classical and other learning, and his library was lined with carefully studied books. He was gentle and courteous, and though full of humour he

could not abide even those relics of coarseness which survived in "polite conversation" in the nineteenth century. He was always ready to make allowance for the incompetence of those who did their best; he made no enemies, and his position as regards more serious matters was a very different one from that of his great predecessor.

Both, however, were fond of argument, and neither in the course of it could easily brook opposition. Verily it is a matter of thankfulness that they lived at different epochs! It is well that Lister was able to contemplate Hunter's many great qualities and his few obvious defects through the modifying mists of the intervening years.

I have spent the last year in an atmosphere permeated by the spirit of John Hunter; I have had the privilege of passing the best years of my life in the closest intimacy with Lister; and I often ask myself in what way a genius surpasses the average man. After a day passed in the company of such an one, and after meditating on any particular thing that he did, the ordinary man might fancy that there was nothing in it he could not have done equally well himself; and yet the life's performance is so different! The individual touches of the brush might conceivably be

made by anyone, but only the artist can produce the picture. That of course depends upon the master mind which co-ordinates the details, making them minister to the result. We cannot attain to that, and it is the consciousness of this superiority of the great that makes the position of ambitious mediocrity so painful. But, though we cannot reach to the height of Lister or of Hunter, we may make our lives more useful by imitating their extreme diligence, their accuracy and their habit of finishing whatever they were engaged upon before turning to the next matter—by not shirking the "long days of labour and nights devoid of ease," or spending too much of our time on pleasures and indulgences.

The problem of Life to Hunter was the still unsolved riddle of its meaning and of its origin. Lister was content with the belief that at the present day there is no spontaneous generation. Had he doubted the truth of this doctrine, he might possibly have had misgivings as to the truth of the gospel that he preached. Fortunately he did not doubt, for he was a man of firm convictions.

But, after all, whether chemical changes are now and always converting dead inorganic substances into living protoplasm is, for practical men, no more important than the

DEATH MASK OF JOHN HUNTER.

more abstruse question as to whether matter is composed of atoms or vibrations.[1] Life for us has another meaning: whilst the blood is moving in our bodies, as John Hunter said, we have life, and the problem for us, taking him for an example, is not simply to keep alive, but to live well.

> "Nicht dass man lebe, sondern wie,
> Ist Mannes würd'ges Streben;
> So lang mir Leben Gott verlieh,
> Will ich's lebendig leben."

[1] Hunter had his doubts about the existence of matter. In a letter to Jenner he says, "My proof of the non-existence of matter is in colours, &c."—"The Works of John Hunter," by J. Palmer, vol. i, p. 89.

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Godlee, (Sir) Rickman John
The Hunterian oration

Biological
& Medical

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